Combat Crew

strategic air command

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NOVEMBER 1978

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IF IN DOUBT-REPORT IT

Why don't aircrews use reporting systems which ultimately work to their benefit? After all, when a mishap or hazard goes unreported, no investigation is conducted, no corrective action taken, and eventually the same mishap or hazard occurs again. Many crewmembers just don't know what to report. This is not really too surprising since even full-time safety officers often disagree on what is, isn't, or might be, reportable. There are numerous reporting regulations. We have, in numerical order, AFR 127-3, Hazardous Air Traffic Report (HATR) Program; AFR 127-4, Investigating and Reporting U.S. Air Force Mishaps; AFR 127-6, The USAF Hazard Reduction Program; AFR 127-15, The Bird Strike Hazard Reduction Program. These regulations all have one thing in common: they task aircrews to submit reports.

Sometimes adding to the confusion is the complexity of the reporting. Way back when I first pinned on wings, it was simple. You had two reports: incident or hazard to worry about. Incidents were a nice, easy laundry list: engine shutdown, dropped object, bird-strike, etc. Everything else of a scary nature was a hazard. Today, however, the number of reports has doubled, and the complexity of the rules has increased. But it is still possible to produce a "potentially reportable" list that is relatively simple.

First, let's look at AFR 127-3, the HATR program. Here there are really just two situations to report:

(1) Your aircraft got closer to someone else's than you felt comfortable about.

(2) Anything else (publications, procedures, people, facilities, etc.) that could or did create a hazard to air traffic.

Simple, huh? These things should be reported on AF Form 651.

Now, we'll tackle 127-6, Hazard Reports. Here, the criterion is simple:

Any condition, act, or circumstance that jeopardizes safety. Use AF Form 457.

AFR 127-15 is a new one concerning birdstrikes. Again, the requirement is simple: report all known or suspected birdstrikes.

I've purposely saved the toughest for last: AFR 127-4, Mishap Reporting. This is the regulation that used to have a neat laundry list. Safety professionals should read on with great caution, especially if you suffer from hypertension, because I'm about to commit heresy.

This explanation of 127-4 reporting is not a paraphrase of the regulation. Some of the "reportable" items do not fit the book definitions, and some reportable occurrences aren't even listed. Bear in mind that this article is aircrew oriented and concentrates on situations or symptoms the aircrew will be aware of. If the aircrew reports the items on the laundry list, potentially reportable mishaps will get to the attention of the fulltime safety troops who can then make a final determination. The key note is simplicity, for the sake of the poor soul who is near the end of a 16-hour day and doesn't need complications in his life. First, a little background information.

Reportable mishaps fall into four broad categories:

- Aircraft damage
- Engine shutdown/flameout
- Physiological episodes
- High accident potential mishaps

Reportable aircraft damage is due to external causes, i.e. loads, forces, punctures. In other words, the machine is bent. Engine shutdown/flameout needs no elaboration. Physiological episodes include all those nasty, unpleasant, gruesome things they told you about in training. A couple of unusual ones can bite you. Toxic fume exposure or rapid decompression to a cabin altitude above FL 250 must be reported whether or not anyone develops symptoms. High accident potential mishaps are a class all by themselves. However, they can be reduced to two specific situations and one generality.

Significant engine problems; flight control problems, including autopilot, trim, or stability augmentation; and anything else you think deserves a close look by safety personnel.

Here is what I view as a good laundry list of occurrences that should be reported:

- Engine shutdown/flameout/significant thrust loss
- Compressor stalls
- Flight control problems
- Physiological problems (hypoxia, sinus block, bends, etc) including:
  - Cabin altitude above 250
  - Toxic fume exposure
- Any emergency landing, regardless of reason
- Aborted takeoff
- External aircraft damage
- Birdstrikes
- Near midair collisions
- Falling objects (panels, hatches, etc.)
- Any hazard to ground/flight operations

Remember the Golden Rule of Reporting: If in doubt, Report it.

Thanks to Capt Ronald W. McCracken
42d BMW, Loring AFB

Combat Crew

Magazine of the Strategic Air Command - 29th Year of Publication

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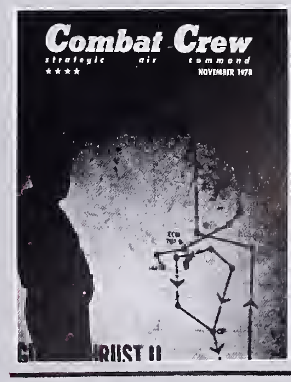

ON OUR COVER

Premission briefing of the route to be flown by B-52D crews during Giant Thrust II exercise. For more on this see page 4.

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GIANT THRUST II

Major Peter Alexandrakos
43SW/OI, Andersen AFB, Guam

For over 20 years, the B-52 has served as the backbone of the Strategic Air Command's bomber force and has contributed to nuclear deterrence as an integral part of our nation's strategic triad.

However, the B-52 also maintains a conventional capability that can be projected to world trouble spots in lower levels of conflict. This capability was demonstrated extensively during Arc Light operations in Southeast Asia, and particularly during LINEBACKER II.

After the Vietnam era, very little was heard about the conventional role of the B-52 — until a couple of years ago when it became apparent that the Soviet conventional buildup in Europe warranted a serious conventional response capability by the U.S. Since then, B-52 combat crews have become increasingly engaged in conventional training and exercises such as BRAVE SHIELD and RED FLAG. More recently, B-52s have also participated in various joint exercises with NATO forces in Europe.

In conjunction with these exercises, a great deal of thought, planning and discussion have been generated within the Strategic Air Command regarding the role of the B-52 in contingency situations. This is one in which theater commanders, like the Commander in Chief, Pacific or the Su-

(Left) Brigadier General Christopher S. Adams, Jr., GIANT THRUST II Exercise Test Director and SAC's assistant deputy chief of staff for operations, discusses his flight with Captain Max Lunt, navigator instructor, 60th Bomb Squadron.

(Below) An airman prepares braces on the bomb rack of a B-52D Stratofortress. The racks are mounted under the wings of the bombers so that munitions maintenance personnel can upload 500-pound bombs.

preme Allied Commander, Europe, may need a high level of conventional bombing support quickly and repeatedly over a limited period of time.

To determine the capabilities of the B-52 force under such conditions, the Strategic Air Command conducted a surge test operation at Andersen AFB, Guam from September 11-16. The test was called GIANT THRUST II and was one of the most challenging efforts ever undertaken by a bomber task organization.

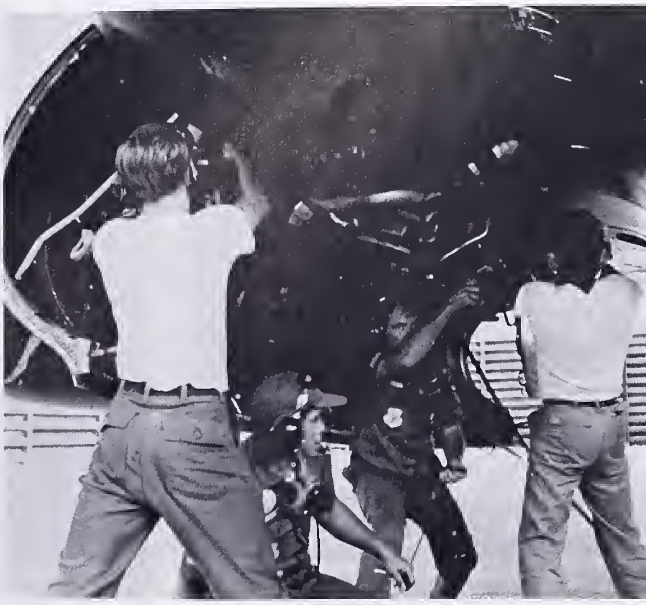
The challenge was simply stated. Andersen's 43d Strategic Wing was tasked to generate and fly 27 sorties per day, around the clock, for five consecutive days using the fourteen B-52Ds based on Guam. The magnitude of the challenge can be appreciated if you consider that aircraft turn around times were significantly shorter than those encountered during Arc Light and Bullet Shot operations.

The parameters set for the test also stipulated that it would be conducted at minimum cost, using pri-

Captain John Reilly, radar navigator, goes through the B-52D preflight check in preparation for a GIANT THRUST II mission.

(Above) Air Force Chief of Staff General Lew Allen, Jr. meets with B-52D crewmembers during his visit to Andersen AFB. (Right) Maintenance operations were performed around the clock during the six-day exercise.

Preparing to hook up the tow bar to a tug are organizational maintenance squadron personnel from Andersen AFB, March AFB, California, and Dyess AFB, Texas. From left to right: SSgt Steve Creech, 43d OMS; SSgt Frank Chmelik, 22d OMS; A1C Rich Doyle, 43d OMS; and SSgt Lonnie R. Williams, 96th OMS.



(Right) The heart of the maintenance operation is Job Control where all bomber maintenance is scheduled and monitored. SSgt Christ Parrow and TSgt Tom Thompson, 22d Bomb Wing, March AFB, constantly monitor the radio net and maintain status boards on the condition of all 14 B-52 aircraft.

(Center) A1C Ronald Wiggins, 7th Avionics Maintenance Squadron (AMS), Carswell AFB, and A1C Michael Iaeger, 96th AMS, Dyess AFB, make repairs on the radar unit in the nose of a B-52D Stratofortress during SAC's GIANT THRUST II exercise.

marily those assets in place at Andersen. Personnel augmentation was necessary, however, and included approximately 550 maintenance and support personnel who deployed to Guam from SAC units in the CONUS for the test period.

Most of the TDY personnel were maintenance specialists who would augment the maintenance squadrons in the 43d in order to place the wing into a 24-hour operation. During the test, the augmentees joined members of the 43d Strategic Wing to form a task organization known as the 4043d Strategic Wing. Among the TDY personnel, there was also a group of observers and data collectors from Hq USAF, Hq SAC, the Boeing Company and the Rand Corporation.

Prior to the exercise, Brigadier General Christopher S. Adams, Jr., test director and SAC's assistant deputy chief of staff for operations, said that the purpose of GIANT THRUST II was "to collect and develop mission data that would be used in predicting regeneration rates for future contingency operations involving the B-52.

"In addition," General Adams stated, "the test will enable us to validate newly developed B-52 maintenance procedures, and provide valuable and practical experience to participating aircrews, munitions loading teams and aircraft maintenance personnel.

"After carefully analyzing data collected, we will determine the maximum B-52 sortie rate we can realistically expect to maintain in a contingency environment," General Adams concluded.

To reduce the turnaround time after each sortie, the maintenance procedures to be validated were quite different from those used in day-to-day operations. Instead of performing such tasks as refueling, bomb loading and equipment replacement or repair

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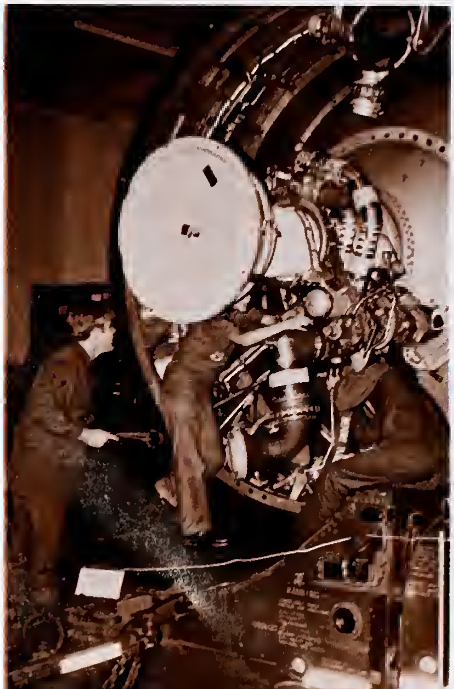
At SAC's 308th SMW, a top safety record is built . . .

DAY BY DAY

CAPTAIN KEN GARRETT
308th SMW, Little Rock AFB



Thousands of gallons of highly toxic hypergolic rocket propellants . . . explosive components . . . electrical equipment carrying 480 volts of AC power . . . hydraulic lines pressurized to 3,500 psi . . . bumping and tripping hazards with 140-foot drops . . . seven thousand pound steel blast doors . . . aging vehicles traveling more than 2.5 million miles annually over narrow, twisting rural roads . . . and a very complex weapon system over 15 years old!

NUCLEAR SAFETY INSPECTION STATUS
MISSILE SAFETY INSPECTION STATUS
GROUND SAFETY INSP

Are these the classic ingredients of a safety officer's ultimate nightmare?

No, they are the normal day to day working conditions encountered by the men and women who operate, maintain and protect the 18 Titan II ICBM complexes assigned to the 308th Strategic Missile Wing at Little Rock AFB, Arkansas. According to Major Bob Quisenberry, 308th SMW chief of safety, the successful handling of the day to day task has put the 308th in a mishap-free status on the SAC Safety Hall of Fame for over 13 years. It has also helped to develop a *People Protection Program* that has been publicized throughout SAC as a highly successful and comprehensive safety program. In addition, during the past two years, the 308th SMW has received Private Motor Vehicle and Air Force Motor Vehicle Traffic Safety Awards, the National Safety Council Award of Honor for Ground Safety, a USAF Missile Safety Plaque, the 42d Air Division Ground Safety Trophy, the Col. Lee R. Williams Memorial Trophy for being named the best missile wing in SAC, and the Air Force Outstanding Unit Award.

The primary reason for all this success, reports Major Quisenberry, "is the fact that safety is not a separate program in the 308th, it is an integral part of every program. Safety is a concept that is automatically incorporated into every project, procedure, plan and operation from its inception to the final incorporation.

"We realize that every squadron, division, shop and team operates under conditions which are unique," stated the Major. "These conditions can produce hazards and it would be ridiculous to think that we could sit in our office and dream up programs to combat each hazard. What we try to do instead is instill the concept of safety into each person so he or she can project that concept into their current situation."

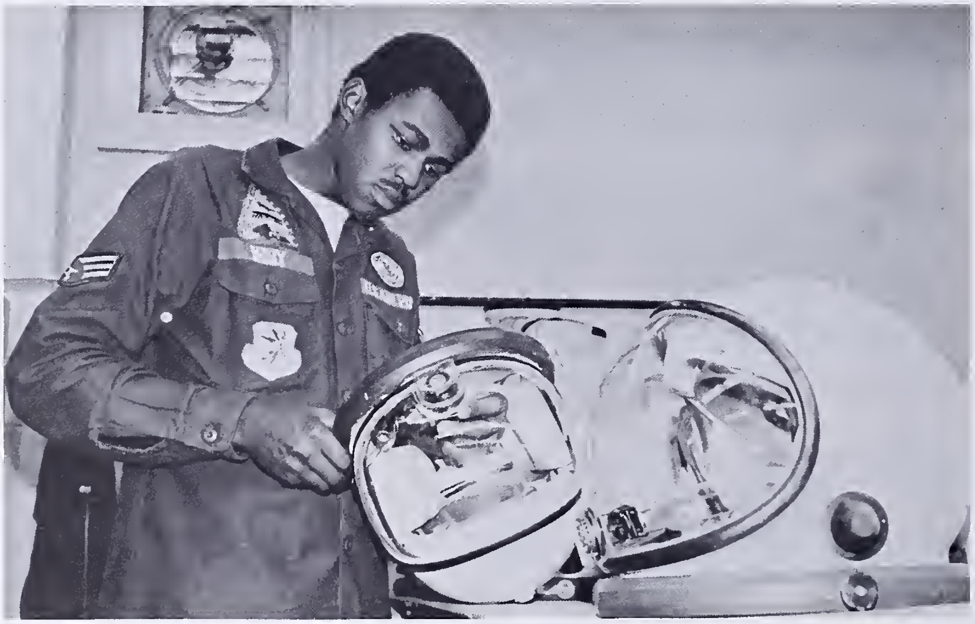
The 308th *People Protection Program* is a program of awareness that challenges people to accept an individual responsibility to safety both on and off duty. And once an individual accepts that responsibility he then projects it to the others around him. "If you have a four-man team performing a job and each person accepts the responsibility for his safety and the others too, then the layers of safety consciousness overlap, intertwine and reinforce themselves into a truly protective shield," the Major added.

Of course, for the *People Protection Program* to be successful, it has to be endorsed and supported at all levels from the wing staff through the squadrons to the individual shops and teams.

Col Gary F. Marsh, 308th SMW commander, comments, "Safety is an individual responsibility and demands our attention in all our activities both on and off the job; people are our greatest asset in performing our vital mission."

The operations side of the 308th is composed of the 373rd and the 374th Strategic Missile

Three of the steps to be compiled in the checkout of a 308th RFHCO suit for use in the Titan II. They are carried out by Sgt Irly in the unit shops.



Squadrons, each with nine Titan II missile complexes and the usual DO support agencies such as training, stan/eval, and scheduling.

The Titan II complex consists of both above-ground and hardened below-ground facilities. Above-ground facilities include security fencing, soft antennas, propellant and electrical connections, a Doppler radar for security surveillance, and an entrance to the access portal. The most immediately noticeable feature, however, is the 758-ton silo closure door protecting the 103-foot Titan II missile.

Hardened underground facilities include three separate but connected structures, the access portal, the control center, and the missile silo. The access portal is flush with ground level and provides entry to below ground facilities. It contains a television camera for identification of incoming personnel by the crew on duty, telephones for authentication procedures and four separate seven-thousand pound steel doors for blast protection.

The control center is a three-level steel shock isolation cage suspended by eight shock mounts hung from the domed roof. This three story, suspended building is 40 feet in diameter and contains the crew's kitchen, latrine, and sleeping quarters, the communications systems, and equipment for monitoring, launching and troubleshooting the missile and its associated equipment.

The missile silo consists of a 150-foot deep launch duct containing the missile and is surrounded by nine levels of support equipment. A small personnel and equipment elevator operates between levels two and eight. Also, two exhaust ducts extend from the bottom of the missile launch duct to direct missile exhaust and ingested air to the surface.

A Titan II crew consists of two officers and two enlisted personnel. The missile combat crew commander (MCCC) manages all operations throughout the complex from the launch control console. His duties include launch, hazard emergencies and malfunction isolation operations. His primary duty, however, is to insure proper reaction to emergency war orders. The deputy missile combat crew commander (DMCCC) assists the crew commander and is additionally responsible for all complex communications systems. The ballistic missile analyst technician (BMAT) constantly monitors the readiness status of the missile and advises the crew commander of conditions which may effect readiness. The missile facilities technician (MFT) monitors operation of all facility systems and associated equipment in support of the launch complex.

To insure all crewmembers are prepared to handle any emergency at the missile site, the concepts of safety procedures and awareness are present from the first day of upgrade training through a crewmember's last alert.

Capt Bob Rowell, wing instructor crew commander, comments, "I think 80 percent of safety is from the individual, and I try to help the individual get a concept of safety. The first day of training I give all the new folks a very comprehensive missile safety briefing outlining all the potentially hazardous aspects of Titan II crew duty. Also, there is a virtual insistence of all safety precautions on training alerts and the students get valuable hands-on training in hazardous operations such as lowering platforms in the launch duct.

"I think people are more safety conscious now than they were when I started crew duty six years ago, and that's good because overall our crew force is younger. Also, there may be a trend towards complacency because the Titan IIs have been around for so long and some people think they have seen everything that can happen out here. We just have to work a bit harder because of this trend, and I feel our good record speaks for itself."

Lt Col Ronald Kieklak, chief of the 308th Ops Training Division, added, "Missile crews get a constant exposure to safety procedures. In our Ops Training Division we coordinate with the wing safety office on everything we produce, from the monthly Alert Training Plan to a three-line predeparture briefing. Even if the subject isn't safety oriented, we send it to the safety guys to see if they want to add something to it. Also, in the name of safety, we have had some of our instructors certified as cardiopulmonary resuscitation (CPR) instructors and they train all our crewmembers in this lifesaving procedure."

Training days are not the only times the combat crews are exposed to safety. Before each alert at the predeparture briefing the crews receive a weather briefing which outlines any weather hazards forecast for the next 36 hours. At the site, after crew changeover, the oncoming crew inventories all the safety equipment at the site and receives a crew operations briefing which reviews such items as the two-man concept, individual safety responsibilities, and hazard notification procedures.

Following the crew operations briefing the missile crew accomplishes the daily shift verification (DSV) checklist. This 224-step checklist checks all pieces of equipment in the entire complex for safe operation, abnormal conditions and general housekeeping.

308TH GUARD MOUNT

Normally even before DSV is complete the maintenance crews start arriving at the site to perform scheduled maintenance for that day. Prior to any team performing maintenance the crew commander gathers all maintenance personnel together for a thorough maintenance briefing which covers hazards. The team chief must verify that all of his personnel understand the potential hazards, know how to use the required safety equipment, and know the rules which apply when made aware that a hazard exists. Then, if their maintenance is to be done in the silo equipment area or the launch duct, they are given a silo entrance briefing which insures each individual has the necessary safety and communications equipment needed for silo entry. Then they can go to work.

The commander of the 308th Missile Maintenance Squadron, Lt Col Edmund Robert, applies a personalized approach to safety. "My first introduction to new people in my squadron is a personal briefing. In this briefing I stress the hazards inherent in their job and the safety procedures and equipment available to them. I follow this up with a Newcomers Coffee for the wives where I explain again all the safety procedures we use to protect their spouses.

"When it comes to safety, we don't just pay lip service to it, we DO it, because it's not the other guy who is involved in accidents. I feel the most hazardous time my people spend is the time they spend at home, followed by the time they spend driving to the base and to the missile sites. I feel they are safest when they are working on the complex.

"One of the reasons I feel people are more safety conscious at the site is because of the additional equipment they carry with them. The hard hat, flashlight, earplugs, radio transceiver, gas mask — they all serve as a constant reminder that you are in an environment which can become hazardous, and you act accordingly."

SSgt Ken McKee, a team chief in the RPIE Division, feels repetition is the key to safety. "Safety is a matter of individual awareness. Each time you go into the hole you receive that same safety briefing and even though you can recite it in your sleep it does trigger your mind to think of safety. Around here acting safely is almost at the subconscious level, like automatically buckling your seat belt without ever thinking about it."

Perhaps the most hazardous operations performed by 308th personnel involve the propellant transfer system or PTS. In a PTS operation skilled specialists transfer the missile propellants from holding trailers topside into each stage of the missile or vice versa.

There are two missile propellants stored on the two-stage Titan II missile, the oxidizer and the fuel. Nitrogen tetroxide is the oxidizer used on the missile. It is very corrosive and forms nitric acid when it comes in contact with water. The rocket fuel is called Aerozine 50, a combination of unsymmetrical deymethal hydrazine and hydrazine. It is very toxic.

These two propellants are hypergolic (they explode on contact) and need no oxygen source. The Titan II Stage 1 carries about 11,000 gallons of fuel and 14,000 gallons of oxidizer. The State 2 carries about 2,800 gallons of fuel and 3,100 gallons of oxidizer.

To handle these propellants, PTS personnel routinely don a rocket fuel handler's clothing outfit (RFHCO). Resembling a space suit, this outfit has a self-contained breathing apparatus providing air for about one hour, and a battery-

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OPS HAZARDS

Editor's note. This mishap was adapted from a National Transportation Safety Board Report. Although this mishap involved a civilian aircraft, the lesson applies to the military pilot.

ELEMENTS OF A CRASH — Issuance and acceptance of an "incomplete and ambiguous" holding clearance, coupled with the flight crew's failure to follow procedures for flying the holding pattern and coping with radio problems, caused a cargo jet crash north of Salt Lake City last December, according to the National Transportation Safety Board.

The Board attributed the Air Traffic Control (ATC) clearance problem to pilot and controller habits developed by years of operating with radar to control aircraft traffic. Also contributing to the accident was the failure of one of the four primary electrical systems. Reasons for the failure could not be determined.

The four-engine cargo plane impacted at the 7,200-foot-level of a 7,665-foot mountain about 14 minutes after the flight crew had discontinued an approach to Salt Lake City International Airport and asked for instructions for holding while they tried to solve a landing gear problem. All three crewmembers died in the crash.

Safety Board investigation found that because of the electrical system problem, the crew did not have landing gear indicator lights, and thus were unable to be certain the gear was down on the aborted landing approach. During one and one-half "racetrack" holding patterns which followed, ATC radio contact was discontinued so the crew could use the one operative radio to discuss the electrical problem with maintenance personnel.

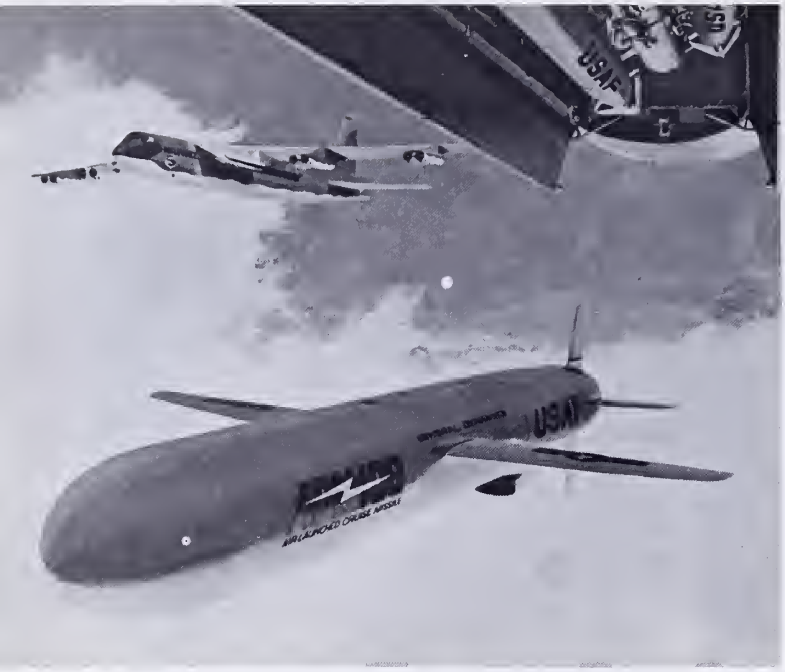
After the first pattern, the aircraft strayed sufficiently east that controllers tried to contact the flight — both by conventional ATC radio and with a message broadcast on a navigation radio channel. When the flight did resume radio contact after more than seven minutes, it was given turn and climb instructions. The jet was climbing, in clouds, just before it crashed.

The Safety Board held that the electrical system failure alone was "not responsible for the accident" because the crew "should have been able to safely fly, navigate and land the aircraft" in spite of it.

There followed, however, four critical events involving "numerous acts of omission and commission, the slight alteration of which probably could have prevented the accident," the Board said.

- The approach controller did not specify on which "radial" the flight was to hold: the bearing from a radio navigation facility on the ground along which the aircraft was to fly its holding pattern. And the crew did not question the omission, asking if they were to "hold north of the VOR." The controller replied that this was "correct, northwest of the VOR . . ."
- Less than a minute later, when the pilot received permission to switch from ATC to company radio frequency, the controller was not told, as required by regulation, that the flight had lost one of its two communications radios, the extent this impaired its ATC capability, or what ATC assistance the crew needed.
- The flight crew flew the holding pattern with two and one-half minutes to a leg rather than the standard one minute, and maintained an average of 240-knot airspeed rather than 200 knots. The result was the aircraft flying "into an unsafe area when the air traffic controllers could not provide any assistance."
- The controller "did not stress the need for immediate action" when he regained radio contact and directed the crew first to turn left, and later to climb, to avoid the mountains. The Board did note that the controller's radar display did not permit him to "make fine distinctions" in terrain avoidance.

The Board's complete finding of probable cause was "the approach controller's issuance and the flight crew's acceptance of an incomplete and ambiguous holding clearance in combination with the flight crew's failure to adhere to prescribed impairment-of-communications procedures and prescribed holding procedures. The controller's and flight crew's actions are attributed to probable habits of imprecise communication and of imprecise adherence to procedures developed through years of exposure to operations in a radar enviroment.



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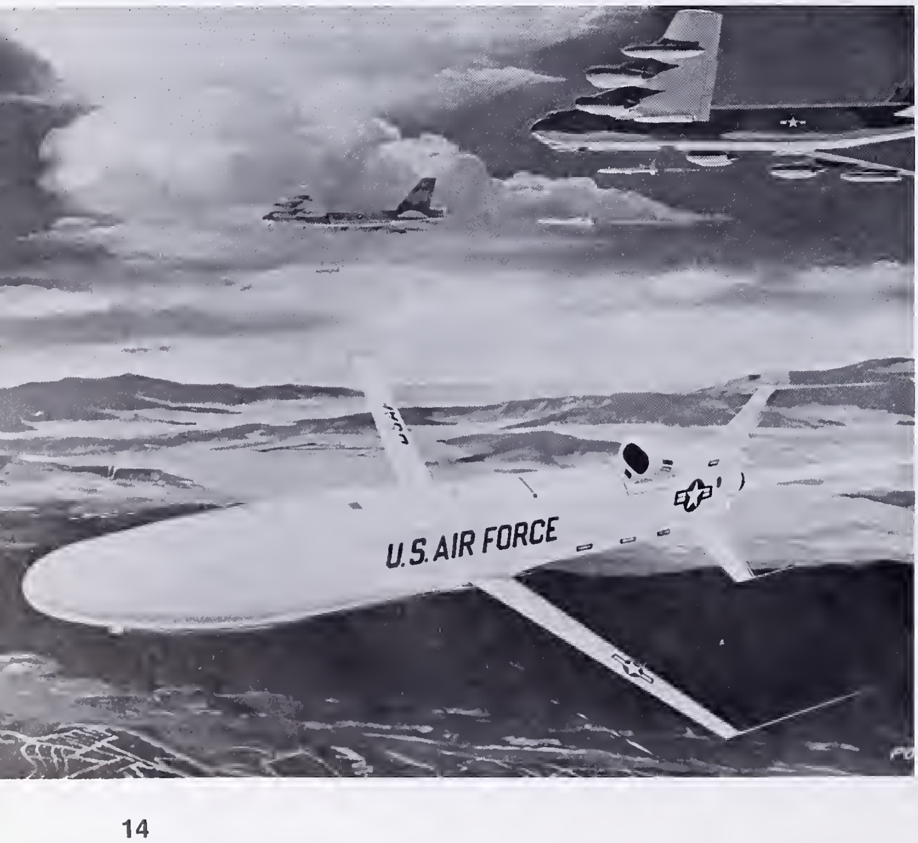
HQ/SAC — DIRECTORATE OF AERONAUTICAL REQUIREMENTS



Captain Donald R. Hayton
HQ SAC/XPHC, Offutt AFB

CRUISE MISSILE — When President Carter canceled the B-1 in the summer of '77, many people were not aware of the capabilities of the air launched cruise missile. Some thought it was a "Star Wars" type weapon with new super-secret technologies. Actually, the cruise missile being developed today has been under study for over 10 years. It evolved from efforts to build a replacement for the ADM-20 decoy missile carried on the B-52 aircraft. Although the new decoy program was terminated, the technologies developed formed a basis for the current missile.

The ALCM is a subsonic missile, powered by a small turbofan engine, capable of flying low level terrain following over long ranges with a high degree of accuracy. These enroute and terminal accuracies are obtained by an inertial navigation system which is periodically updated by terrain contour mapping (TERCOM) fixes. TERCOM fixing is accomplished by using a downward looking radar altimeter to measure the altitude variations of the terrain over which the ALCM is flying. The onboard computer then compares the measured terrain variations to prestored digitized maps. Once a correlation or fix is made the inertial system volocities are updated and the missile track is corrected.

The Air Force and Navy were directed in 1973 to develop the air launched cruise missile and sea launched cruise missile concurrently using common technologies. The engine, navigation system and warhead are essentially the same for both missiles. The Boeing Company and the Air Force began building both a short range and a long range version of the cruise missile for employment on SAC B-52 aircraft. General Dynamics and the Navy began development of the TOMAHAWK for sea and ground launch. In 1976, advance development tests were conducted by both contractors to gather information for a Defense Systems Acquisition Review Council decision on full scale development.

Shortly after that decision, the Secretary of Defense directed the creation of the Joint Cruise Missile Project Office. This office, under the direction of a Navy Rear Admiral, was charged with merging the three cruise missile programs (air launched, sea launched and ground launched) under a single director and achieving maximum commonality between the systems. In September '77, the Undersecretary of Defense for Research and Engineering directed the project officer to compete the Boeing and General Dynamics missiles for the air launch version. The actual flight competition will begin in the spring of '79.

One of the critical questions relating to the utility of the cruise missile variant deals with its ability to penetrate and survive hostile enemy defenses. The TOMAHAWK (BGM-109) missiles built for the 1976 advanced development tests were used again in a series of seven survivability tests. The missiles were flown against airborne threats and ground based acquisition and tracking systems at the Pacific Missile Test Center, White Sands Missile Range and the Tactical Fighter Weapons Center at Nellis Air Force Base. Dr. William J. Perry, USDR&E, designated these tests as "Phase I, engineering tests" to gather data to update the survivability models used in predicting the missile's ability to penetrate present and postulated defenses. Phase IIA, scheduled to begin in mid-September 1978, will examine the most critical threats in greater detail. Phase IIB, part of the ALCM competition, will evaluate the two competing ALCMs in the critical survivability areas of radar cross selection infrared signature and terrain following altitudes.

Survivability, however, is just one aspect of the combined developmental test and evaluation/operational test and evaluation that includes the competitive flyoff. The competition phase consists of 10 live launches per contractor plus approximately 20 captive carry flights during the May-November '79 period. The data gathered during this phase will aid in the source selection of the winning system. The winner will than launch an additional nine missiles to complete the desired objectives.

Testing objectives is not an easy task. A Joint Test Force has been established at Edwards AFB, California. Many of the participants in the test will be SAC crewmembers and maintenance personnel assigned to the 4200th (SAC) Test and Evaluation Squadron. These people will support the Air Force Test and Evaluation Center team established to evaluate IOT&E objectives and the Air Force Flight Test Center Test Force responsible for testing DT&E objectives.

In order to illustrate the problem of testing the many DT&E/IOT&E objectives, let's examine a typical launch. The B-52 aircraft will launch the cruise missile over southern California. An F-4 Chase aircraft will then pick up the missile and follow it throughout the mission. Three chase aircraft will be airborne for each launch: a primary, backup and spare to allow refueling without a break in contact between chase aircraft and cruise missile.

The cruise missile and chase aircraft will fly variations of the Inland 200 (IR 200) VFR ROUTE, proceeding from southern California to the Edwards test area and on toward the Naval Weapons Center at China Lake. As the missile flies, its profile telemetry data will be relayed through the chase aircraft to the Advanced Range Instrumentations Aircraft. This aircraft in turn will relay the data to the Edwards Test Center which uses the information to track the missile's position and evaluate the missile's performance. As the ALCM continues on its course, it will update its inertial navigation system with TERCOM fixes at operationally representative intervals. Enroute navigation will be checked by telemetry data, the chase aircraft position and by radar coverage by the test range's radars as the missile passes through. After crossing the Naval Weapons Center test range, the missile could proceed to the Tonopah Range enroute to the Utah Test Range (the old Hill - Wendover - Dugway ranges). Terminal accuracy will be graded on the Utah Test Range using the high accuracy multiple object tracking system. This system uses a transmitter on the missile and a series of radio receivers throughout the range to provide an extremely accurate three dimensional position of the cruise missile.

In addition to the personnel necessary to support the test ranges and aircraft already mentioned, there are several other groups directly involved in the test operations. Photo chase crews, midair recovery helicopter teams, contractor representatives, mission planners, maintenance personnel and security teams will all be required for successful completion of the DT&E/IOT&E missions.

This will not be the end of testing for the cruise missile. SAC will continue testing to validate reliability and performance figures used in emergency war order planning just as we do SRAM today. DT&E/IOT&E, however, is the basis for successful procurement and employment of the cruise missile. SAC, AFTEC, JCMPO, AFSC, AFFTC and contractor personnel will spend thousands of hours planning and conducting the tests to develop the best possible air launched cruise missile for SAC and the Air Force.

Power To Spare

Using less than maximum power for takeoff is a great idea — most of the time.

EDITOR'S NOTE: This article is reprinted from the July 1978 MAC Flyer. Its message applies to all the SAC Flyers now using partial power takeoff procedures.

Capt Bruce L. Gumble
Associate Editor, MAC Flyer

When the reduced-thrust takeoff procedures for MAC airplanes were first published, there was a lot of head-shaking. Typical comments were, "I just don't like it — I want all the power I can get," or "What happens if we lose an engine — are the charts any good? Can we still get airborne?"

A lot of the skepticism came from long-standing tradition. Many of us started our flying careers in piston-engined airplanes; generally speaking, the only acceptable power setting for takeoff in a recip was "all you can get." Even the folks who have never flown anything but jets remember the T-33 or T-37 as being anything but overpowered. And watching a grossed-out KC-135A taking off on a hot day doesn't inspire a lot of confidence in the power of the jet engine.

But things have changed considerably since those airplanes first flew. Years ago, the commercial airlines recognized that having a critical field length of less than half the runway available was an expensive luxury — expensive because the engine hot-section temperatures encountered at maximum thrust took their toll in engine life and reliability. Why not accept an extra thousand feet or so of critical field length with the possibility of doubling engine life and reducing premature engine failures significantly?

The idea worked. Some airlines found their engine maintenance costs dropping by as much as 50 percent with the use of reduced-thrust takeoffs. MAC adopted the idea several years ago, and the reduced-power takeoff has been with us ever since.

But any procedure can have its drawbacks, and this one is no exception. As so often happens, it's not the procedure itself that's at fault, but the way it's applied. We mentioned earlier that the tradition of using all the power available led to doubts about the effectiveness

of a reduced-power takeoff. That same sort of mental "set" can produce just the opposite reaction: a tendency to think of the reduced power setting as a maximum, with dire consequences in store for those who exceed it.

Several years ago, a jumbo jet failed to get good altitude during a reduced-power takeoff and settled in off the end of the runway. No, the lower power setting wasn't responsible; the crew had neglected to extend the leading-edge slats. But the airplane could have kept flying — *if the crew had thought to shove the throttles up to the max power setting.* They didn't, and the result was a major accident.

Another story, thankfully with a happier ending, was related by a C-141 crew. They were making a heavy-weight, reduced-power takeoff from an overseas base. The Starlifter's acceleration seemed a little sluggish and finally, as the 2,000-feet-remaining marker passed, the IP in the jump seat reached up and firewalled the throttles. The airplane got off the ground just before the departure-end overrun. This time, the culprit was an unreported wind shift; instead of a headwind, the crew was fighting a 14-knot tailwind.

The point of all this isn't that reduced-power takeoffs are unsafe; they're not. As long as you're careful with your takeoff data computations, a reduced-power takeoff will provide all the performance you'll need. But there are plenty of things you *can't* plan for that could turn that ordinary takeoff into a bucket of worms; windshear, misweighed cargo, and multiple engine failure are some real-life examples. And these things apply to *any* takeoff, not just the reduced-power variety.

Last year a commercial 727 hit severe windshear on takeoff roll. The airplane rotated, but wouldn't come off the ground; the captain firewalled the throttles and the trijet finally got airborne. It took out some power poles and lines, but the crew brought it back around for a safe landing. And two C-141's are still in the inventory because their pilots didn't hesitate to use all the power they had — one during a full nose-up pitch trim runaway, the other after losing two engines on one side just after liftoff. In each of these three cases, none of the overboosted engines failed.

We constantly fly our aircraft within carefully established limits — airspeed, altitude, power settings, bank angles, and so on. There are very good reasons for those limits, the primary one being that they represent the maximum performance necessary for normal operations. And that's what a reduced-thrust takeoff is: a safe way to accomplish a normal operation, with the extra added attraction of economy and greater engine reliability.

But normal, routine operations lead to normal, routine thinking; when things turn sour, the responses that apply to an ordinary situation may no longer be enough. When a takeoff suddenly changes from "Ho-hum" to "Omigawd!" how long will it take you to remember just how much more performance you can squeeze out of your airplane? Could you amend your takeoff briefing to include, ". . . a reduced EPR takeoff, but let's remember we've got a lot more EPR's if needed . . ."

Think about it. It might keep you from getting caught during that one time in a thousand when you don't really have power to spare.

ACE TOPICS

CAPTAIN ROBERT KIRKWOOD
ATC Flight Safety

T-37 GAS PAINS — When I was asked to write an article for ACE pilots on T-37 fuel supply problems, I felt like I'd been asked to give career counseling to a Chief Master Sergeant. Most of you fly aircraft that carry more fuel than the combined gross weights of the four aircraft I've flown since I graduated from UPT. I felt a little better when I remembered that all T-37 pilots are fools. Before you tweet drivers start writing poison pen letters, let me explain. One often repeated definition of a fool is "Anyone who is flying an aircraft with less than one hour's fuel in the tanks." Since the T-37 carries about two hours' worth of fuel, we do a lot of flying in the "fool" category. Given this situation, management of available fuel in the T-37 takes on added significance. There are three ways you can end up with less than 309 gallons of usable fuel: start with less than a full load, trap fuel in the wing tanks, or pump fuel overboard.

A Low Load — No tweet pilot would intentionally take off with less than full tanks, however, a few have recently discovered, during the level-off check, that they had been robbed of a couple hundred pounds of fuel. One crew experienced this thievery on two successive legs of a cross-country. Their third stop was at a base where transient maintenance was either more familiar with the T-37 or read the T.O.s more closely. They discovered a stuck probe in the fuel filler neck. This gizmo is a metal rod that pops up when the filler cap is removed. If it doesn't pop up, a valve between two of the six wing fuel cells doesn't open and these two cells will remain empty — about 170 pounds worth of empty. Due to the location of the fuel sensing probes, this fuel deficiency will not appear on the big gauge prior to takeoff, no matter where the toggle switch is placed. Nice "gotcha." Another problem with this probe is that it just **looks** like it should be held down. Two months ago, a tweet crew arrived at their aircraft during refueling and noticed that the refueling persons were carefully holding down the probes in **both** fueling ports. The moral is that T-37 types need to either brief or supervise the folks who gas their airplane at bases not used to the screamin' midget racer.

Although you are no longer required to remove the fuel caps during preflight, it might be a good idea when you are away from home. That way you at least know whether or not the probe is mobile. Don't forget to press a piece of bare bod on the wing before removing the cap. This prevents a static electricity spark. Next, remove the cap slowly unless you want to shower in JP4. After all this effort to insure you have a full 2,008 pounds in the tanks, it's nice to be able to use as much as you need.

Trapped Gas — Trapped fuel in a wing tank is serious business. Each wing holds 721.5 pounds. The fuselage holds 565.5 pounds. Since both engines feed from the fuselage tank, it is nice to have both wings feeding the fuselage tank continuously. A detailed explanation of all possible problems with fuel feeding would take more space than I have here, so I'll recommend a close study of the Dash One and hit the key points.

During preflight really check the two tubes protruding from under each wing tip. These are air vents from the wing tanks. If they are bent or plugged, your wing tanks may not feed properly or at all! I know of two cases, both at civil fields on aircraft used in static displays, where these vents were abused. In one case, someone backed a small trailer under the wing tip. The wing tip appeared okay but the vents were repositioned. The other problem, unfortunately not discovered until after takeoff, occurred because a litter-conscious person deposited a large wad of chewing gum in one of the vents — gummed up the works. It's really better to discover these things during preflight because the fuel gauge keeps them a secret until you've burned about 300 pounds.

Performing fuel checks in accordance with the Dash One is really critical. The reason you need to do a balance check when the total fuel gets down to the 1600 to 1700 range is that this is the first opportunity you have to detect trapped fuel. Fuel trapped in one wing is no big deal, if you detect it. Try gravity feed and return to base. Adding ten knots on approach helps compensate for the inbalance. I've landed the tweet with one tank full and one almost empty, and it flew almost normally. Aileron trim will take care of the wing "heavy" problem until you slow down. All you need then is a little side pressure.

A more serious problem is having fuel trapped in **both** wings. This can result from a fuselage float switch malfunction, a proportioner pump problem, or a combination of both. In the worst possible case, your **only** hope of detecting this problem is your fuel check. Wouldn't it be nice to know when you have 1600 pounds of fuel remaining that only 157 pounds are usable unless you select gravity feed? So much for the fuel check at 1600 to 1700 pounds.

The good book also recommends fuel checks every 15 minutes. These checks are just as important as the 1600 to 1700 pound checks. The aircraft will take care of **most** fuel feed problems by converting to gravity feed automatically. Unfortunately, the malfunction not included in the above "most" is a real bear! Your fuselage tank, and engines, can run out of petrol with little warning. The low level light is activated by the same mechanism that controls the proportioner pump and gravity feed valves. The symptoms of impending doom mentioned on page 3-19 of the Dash One (a rise on the fuel quantity gauge, boost pump light, and fuel flow fluctuation) are fine. The problem is that the quantity rise is quite slow and easily missed, and the boost pump light and fuel flow fluctuations probably won't occur early enough to allow you to prevent a dual engine flameout. The solution to all this is to do a **complete** fuel check at least every 15 minutes. "Complete" means determining how much fuel is in **each** of the three tanks. If the fuselage tank has less than 415 pounds and there is any fuel in the wings, you have a problem. The solution is to manually select gravity feed. Since this article is getting long, I'll throw in a little re-motivation by mentioning that the above problem recently caused two tweet drivers to fly a nylon approach and brogan landing.

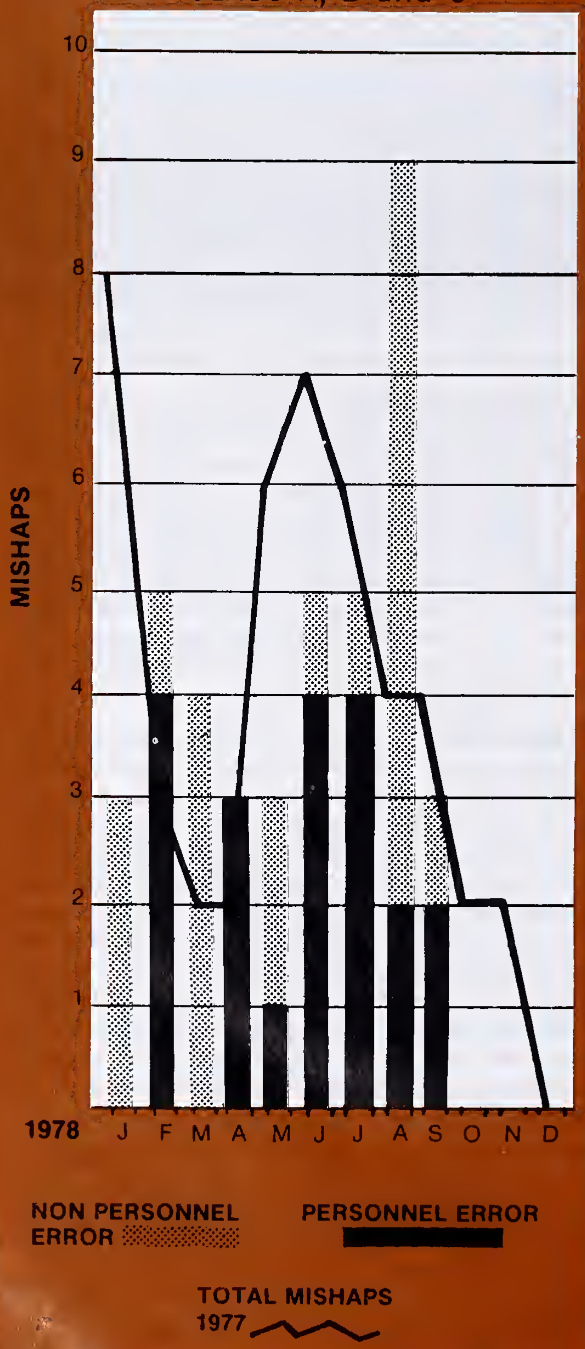
Unplanned Defueling — The baby jet does not have a fuel jettison capability. Right? **Wrong!** The problem is that only the aircraft can decide to dump fuel. It will do so if the high level portion of the fuselage float assembly malfunctions. When this happens, the proportioner pump continues to put fuel into an already full fuselage tank. The associated pressure buildup pushes fuel out a vent line to the saber drain. The cockpit symptom of this malady is an unusually rapid decline in fuel quantity. The solution is, again, gravity feed.

Magic Switch — If you've managed to read this far, you probably have noticed that the first step in the solution to most fuel problems is to switch to gravity feed. You also may have noted that I don't refer to this as the "emergency fuel" switch — its more common name. I just don't like to attach heavy connotations to the use of this switch. It looks impressive with its red, spring-loaded guard, but it merely shuts off all the nice-to-have gadgets in the fuel system and supplies fuel by good-old-reliable gravity feed. True, it is necessary in some emergency procedures, but it also is used for engine start, correcting fuel imbalances, and preventing emergencies from happening. When in doubt, go to gravity feed.

Words to the Wise — The T-37 is an honest, fun-to-fly aircraft with a remarkable safety record. You can add to this record by keeping in mind that there is nothing more useless to a tweet driver than fuel left on the ground, fuel that is just along for the ride, and fuel being sprayed over the landscape. Help those J-69 engines accomplish their primary purpose of converting JP4 to noise and you'll continue to get a little thrust when you need it — as a bonus.

Missile Mishap Report

DOD CLASS A, B and C



MORE SRAM FIN DAMAGE Load crewmembers failing to maintain proper clearance between the ADU-317/E adapter and 60-degree fin has resulted in two more cases of 60-degree fin damage. Two flight control actuator assemblies had to be returned to depot for repair. A few minutes of inattention in maintaining proper clearance cost the Air Force $1,172.00. It has been said before — but again — insure all load crews are aware of their responsibility to maintain proper clearances during loading operations.

RAIN IN THE SILO — A drain line designed to carry water overflow into the launch tube sump plugged with sludge. This caused standing water on the launch equipment room and launch tube floor. The water evaporated, then condensed on the launcher closure door underside and finally "rained" on the missile. The missile was removed and returned to depot for internal analysis.

Since water in the LF is a major problem it is imperative that thorough inspections for water and corrosion be performed by personnel dispatched to each LF. Special attention should be given to the rattlespace drain areas and other inconspicuous areas. Let's keep the rain on the plains.

MHU-123M TRAILER MISHAP — Uploading of a SRAM launcher into a launcher load frame was progressing smoothly. The load team was making a final realignment to the near side square retaining pins. The trailer control for the near side was moved to "up" and then immediately to "down" to align the pins. The near side trailer lift arm lowered suddenly, with the far side remaining in position. The launch adapter separated from the near side outrigger bars, which permitted the launcher and launch adapter to swing free. Damage to one fin and the missile skin resulted. Investigation revealed a failure of the piston rod threads and the piston rod nut threads of the actuating cylinder assembly. The failed nut was measured and found to be shorter than the length of the required nut. Organizations using the MHU-123M trailer should exercise extreme caution in all operations pending further guidance and findings. Urgent action MIP OCHN 78-0131 has been established to investigate this mishap.

CUT CABLES — How far can a site power cable be stretched before it breaks? Maintenance personnel are finding out — and it isn't too far. The second site power cable this month was cut when the G&C van was moved without adequate supervision or proper positioning of the cable.

Three actions would have precluded these mishaps: proper supervision, vehicle spotters properly located, and correct positioning of the site power cable.

DAY BY DAY

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powered radio transceiver for communication.

TSgt Gary Franzen is the PTS shop chief and he has a definite commitment to safety. "Since we work with propellants we are more safety conscious than most people. But even so, there can be a trend to complacency in some of the young guys and gals in my shop. We try to counter this with constant reminders of safety. We review incidents at other bases, read safety reports, and stress safety at each predispatch briefing.

"We also use the team concept around here. We form three eight-man teams and always try to dispatch them as a team. When you always work with the same team you know your co-workers and how they react to situations. Also, as a backup, when two of my people are working in the hole, we have two backups in the blast lock area ready to don RFHCO at a minute's notice. Additionally, when we are ready to disconnect a loaded tank, we have two people working in the launch duct, another two wearing the RFHCO in the silo equipment area and two more in the blast lock area ready to don the outfit if needed. I like the team concept, it works well for us."

Another 308th team concept which works well is the missile armed response team (MART). These two-man teams live at designated missile complexes with the combat crews and provide a 24-hour response capability to their assigned complexes. They respond to duress situations, unauthorized personnel on complex, or activation of the Doppler radar surveillance system. Once at a complex, the MART will conduct a thorough search of the area to verify there are no explosives or unauthorized personnel in the area.

Major Rolland Scott, 308th SPS commander, states, "Our primary emphasis is on vehicle and weapon safety. We incorporate safety throughout our training program and it is strictly evaluated by our standboard troops. Safety is an integral part of each day's guardmounts. I don't think our safety program is any different from all the others around the Air Force — just more thorough.

"Some of our normal safety procedures involve strict use of the clearing barrels at each site and our practice of having one person hold the weapons and the other member hold the ammunition when going through the entrapment area so the crew can verify it on the closed circuit television camera. Our weapon storage containers at the complex also are locked with two locks. The combat crew has the key to one lock and the MARTs know the combination to the other lock," concludes Major Scott.

308TH SMW SAFETY STAFF

Sgt Richard Spears, an SPS standboard NCO, states, "Safety is up to each individual. We have to keep up our mental awareness of safety practices at all times while driving or handling weapons. We have very strict procedures we follow when it comes to safety and there isn't any room for error."

You can see that the safety program used by the members of the 308th SMW isn't much different than other safety programs. It doesn't rely on fireworks, neon lights or 12-hour safety briefings to get the word across. Instead it relies on thoroughness where dedicated people at each level of command carefully integrate safety concepts and procedures into everything they do, day by day.

JCS REQUESTS PHOTOS — The Historical Division of the Joint Secretariat, Organization of the Joint Chiefs of Staff, is attempting to compile a photographic record of the activities of the Joint Chiefs of Staff, with a view to the possibility of eventual publication of such a record.

Contributions are invited from those having photographs or snapshots that might constitute a useful part of such a record. Particularly desired are photographs that record any of the activities of the Joint Chiefs of Staff, or of any individual members thereof, in connection with combat operations or with overseas or CONUS training activities.

You may send material to Historical Division, Office of the Secretary, Joint Chiefs of Staff, Washington, D.C. 20301. Unfortunately, contributions cannot be returned.

GIANT THRUST II

continued from page 7

independently of each other, they were to be performed simultaneously.

Before these procedures were approved for use in the exercise they were carefully scrutinized by a safety survey team comprised of specialists from various Air Force major commands. The procedures were also practiced by Andersen Maintenance crews under a variety of conditions.

To maximize aircrew training, the GIANT THRUST II flying schedule called for an action-packed 15 hour day. After takeoff, each crew from the 60th Bombardment Squadron was to proceed in a three-ship cell flying a profile mission to the U.S. Navy's Western Pacific bombing range, drop a load of live MK-82 500 pound conventional bombs, make an ECM run, including evasive action, over the STR site at Guam's Northwest Field and return to Andersen.

After this three hour and 20 minute mission, crews were scheduled to debrief, take a one hour

Crew Chief Sgt Gene G. Corbin, 7th OMS, Carswell AFB, checks out the cockpit area of a B-52D.

(Left) Major General Andrew Pringle, Jr., 3d Air Division commander, prepares one of the 14 B-52Ds for flight.

(Right) Lt Col Robert Lamb, 3d Air Division director of training, talks with the first group of B-52D Stratofortresses returning from GIANT THRUST II missions. Operations and maintenance activities were coordinated from the Charlie Tower during this SAC-directed test.

break, attend their next pre-takeoff mission briefing and fly a second mission. Following 17 hours of crew rest, the cycle would continue throughout the five day test operation period.

Of major interest during GIANT THRUST II was the evaluation of the wing's capability to sustain a 24 hour a day operation consisting of building up MK-82 bombs, reloading the returning B-52s, quick-turning the aircraft while performing necessary maintenance tasks, refueling and relaunching it on the next mission.

In order to do this, special system safety engineering studies and analyses were accomplished by Hq SAC, AFLC and the 43d Strategic Wing. These studies and analyses resulted in development of several innovative procedures, checklists and maintenance techniques directed toward operating the B-52D in a sustained surge environment — flying the aircraft on multiple missions each day.

Also exercised as a part of the test was the activation of Andersen South — a dormitory complex located nine miles south of the main base and kept in "moth ball" status for contingency operations. The base personnel opened up the dorms, complete with a 300 man dining hall, and the 550 augmentees and evaluators were housed there. The dining facility was operated by TDY food service personnel drawn from CONUS SAC units. It turned out to be one of the highlights of GIANT THRUST II for augmentees. Exceptionally well prepared hot meals were served around the clock.

Although data reduction and analysis will continue for some time, the initial synopsis of GIANT THRUST II is that the B-52D can be called upon to respond to a conventional contingency requirement anywhere in the world; it can operate in a high surge environment and it can provide a theater commander with flexibility of response by repeatedly delivering high order conventional ordnance in rapidly changing battle field situations.

On September 15, General Lew Allen, Jr., the Air Force Chief of Staff, visited Andersen AFB as part of a tour of Air Force units in the Pacific. General Allen toured GIANT THRUST II flightline operations and had an opportunity to talk with airmen participating in the test.

Commenting on GIANT THRUST II, General Allen said, "The B-52 has been part of the Strategic Air Command inventory for many years, over 20, and it is generally thought of as a major part of the United States strategic deterrent force. But of course, as demonstrated during the conflict in Southeast Asia, it has a very significant capability to deliver conventional bombs when that's required. It may be required in the future," General Allen continued, "and for that reason, it is very important that Strategic Air Command crews be proficient in the delivery of conventional weapons and that we have as clear an understanding as we can of the limits of that capability, should it be required.

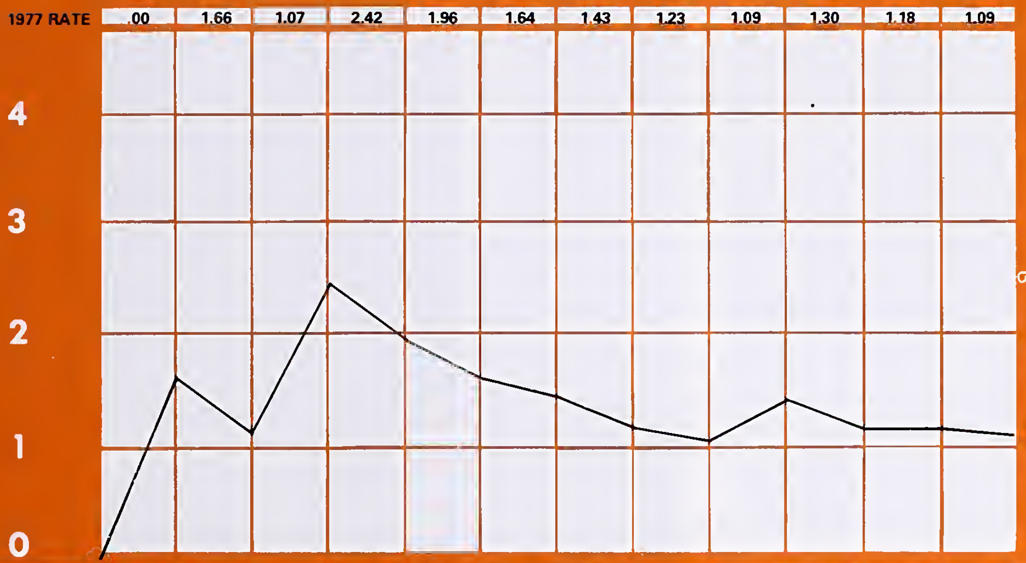
"I saw the aircrews, the munitions loading teams and the maintenance personnel at Andersen doing a marvelous job of demonstrating the conventional capabilities of these B-52D's. They are flying at high sortie rates with airplanes which they are keeping in very fine operational condition, and with great success," General Allen said.

Referring to the maintenance personnel, General Allen affirmed that, "They will validate newly developed B-52 maintenance procedures and they are gaining valuable experience and proficiency in conducting these operations. The data that will be determined from the operation will be very useful to SAC planners in determining the level of sustained conventional firepower that B-52 units can project to trouble spots around the world."

General Allen concluded by saying, "I salute the people of the 43d Strategic Wing and all other SAC B-52 units for helping to maintain a credible deterrent posture for the United States and for demonstrating a readiness to respond to contingency situations anywhere in the world."

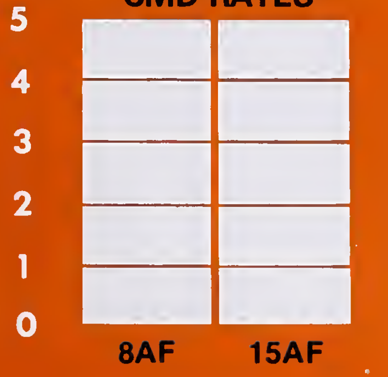
1978 Flying Safety Rate

SAC CLASS A MISHAP RATE (PER 100,000 FLYING HRS)



MISHAPS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1977	0	1	0	2	0	0	0	0	0	1	0	0
1978	0	0	0	0	0	0	0	0	0	1		

1978 SUBORDINATE CMD RATES



MISHAP STATUS

B-52D	OCT 78

LEGEND ⁀ =1977 RATE

GIANT SWORD WRAP UP

The 43d Strategic Wing's munitions loading team garnered the Barrentine Trophy this year during SAC's 1978 Giant Sword competition. This event took place in August at Ellsworth AFB where 20 SAC munitions loading teams were locked in a tight competition. The winning of the Barrentine Trophy carries with it the coveted title of Best in SAC.

The 43d SW team from Andersen AFB earned 1369 points out of a possible 1400. Members of the team were SSgt's James Cavalieri, Kenneth G. Williamson, James S. Cecil, Carl D. Jones and Gaylon C. Rowland; Sgt's Gregory L. Schumann and Mancedon R. Johnson; SrA David A. Eddy, and Herbert L. Parrish, Jr.; A1C James R. Guy, Michael B. Smith, Ronald W. Kirby and David J. Arnsten, and 1Lt Rita A. Fillyaw.

In second place was the team from the 93BW, Castle AFB, last year's winners. Members of the 43SW team also outpointed the field in the Best Munitions Load Crew, Best Loads, and Best B-52 Load categories.

The Best Security Police unit was the 44th SPS, Ellsworth AFB. Team members were SSgt's Fidel R. Garza and Charles C. Copelin II, Sgt Robert F. Hanselman, AlC Richard R. Ruby and Airmen David A. Seiter and Brady Randall. This team also performed the best practical exercise and took the marksmanship contest.

The 416th SPS, Griffiss AFB, team of SSgt's Andrew D. Rayland and Charles S. Clymer, AlC Michael D. Castronova, and SrA James R. Hennessey, Thomas W. McDermott, Jr., and Stephen Kallimanis were winners of the Best Academic Excellence category. The 416th BMW also produced the Best Aircraft Crew Chief. He was SSgt Donald R. Billings, Jr., who scored 99 out of a possible 100 points.

The following teams were judged winners of the following events: Best FB-111 Load — 509th MMS, Pease AFB. Team members included, Sgt Shirley D. Igo, Jr., SrA Robert A. Noyes, SSgt John W. Jones, and A1C Timothy M. Bailey, Ralph E. Marchant, and Jeffrey L. Hogg; and Best SRAM Load — 380th MMS, Plattsburgh AFB team members were Sgt Dennis B. Verkest, SrA Maxwell G. Green, Jr., Glenn M. Prox, and Jorge R. Nunez; AlC Antonio M. McCoy, and Amn David L. Groves.

The Giant Sword competition once again brought together SAC's finest munitions and security police people to prove who would reign as Best in SAC.

U.S. AIR FO

ASTRONOVA

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PROFESSIONAL PERFORMERS

Individuals selected for these pages as SAC's top professional performers of the month are chosen from nominations made by all SAC units. Selection is made only after all nominations have been carefully screened and those chosen meet the highest standards of excellence outlined in SACR 127-2.

FLYING CREW — While preparing for a landing at a strange field, this FB-111 crew from the 509th BMW encountered an asymmetric slat condition when the right wing slat would not extend. This caused the aircraft to roll rapidly to the left. An attempt was made to recover the aircraft to wings level by retracting the extended slat. It would not retract. Because the extended slat would not retract, the crew was committed to an asymmetric slat-no flap landing. Declaring an emergency, they performed a rapid controllability check and found that it took approximately 75% of available stick movement to the right to keep the wings level at 250 knots. Due to a low fuel state, they decided to make an immediate approach in order to conserve fuel for a second approach if necessary. Extending the landing gear and maneuvering for a 20-mile straight-in approach, they completed all normal and emergency checklists and began the approach. A normal landing with the existing gross weight would have been made at 134 knots.

The actual approach was flown at 195 knots with almost full right stick and eight degrees right rudder to keep the aircraft lined up with the runway. A normal touchdown was made but due to the full right stick they were unable to lower the nose to the runway. As the speed decayed on the runway the nose began to slice to the left. A moderate brake application was applied at 170 knots to lower the nose to the runway. From there a normal rollout was accomplished.

The crew's handling of a serious inflight emergency well merits their selection as SAC's Crew of the Month for November. The crew members are Captain Francis J. McHugh, pilot, and Captain George Bayles, navigator.

TITAN CREW — During a recent alert, Crew E-062 reacted with prompt, decisive action when the launch duct air conditioning began malfunctioning causing the launch duct temperature to rise. This in turn caused the stage II oxidizer tank pressure to begin rising and quickly approach operational limitations. The crew requested that a propellant team be dispatched to bleed the oxidizer tank back to an acceptable pressure level. To further complicate the problem, the control for a relay which allows lowering of silo platforms to perform the bleeding was inoperative. Quickly reacting to this new problem, the crew commander contacted Job Control and the pneudraulics team for assistance. Conversation with the pneudraulics team revealed that no spare parts for this relay were available, but it could be bypassed. Due to the distance and time involved for a team to come from base to perform this procedure, the missile would be off-alert before the problem could be resolved. Realizing this, the crew MSAT and MFT volunteered to perform the bypass. After obtaining the concurrence of wing command post, wing standardization/evaluation, and Job Control, the two crewmembers were dispatched and successfully performed the bypass operation. The crew began lowering platforms, only to find that a platform segment would not lower. Realizing that time was now even more crucial, the MSAT and MFT immediately entered troubleshooting and repaired the malfunctioning segment within 20 minutes. The PTS team was then able to enter the launch duct and bleed the pressure back to within tolerance. By overcoming one obstacle after another and through much personal hard work, long hours, and coordination with base agencies, the crew maintained their missile on alert.

MAINTENANCE MAN — A1C Gary R. Daggett, 394 ICBM Test Maintenance Squadron, Vandenberg AFB, has been selected Maintenance Airman of the Month for his superior initiative and outstanding performance of assigned duties. His duty section supports every missile launch from Vandenberg and Airman Daggett, an explosive ordnance disposal specialist, often volunteers to work extra hours and weekends to provide support to his section. After a devastating fire on Vandenberg in 1977, he was assigned to the base cleanup work force. Acting as the supervisor of 15 designated support personnel, Airman Daggett and his teams located, recovered and disposed of more than 650 hazardous explosive ordnance items in the process of clearing base recreational and remote areas. Airman Daggett's positive attitude is reflected in the exemplary manner in which he discharges his duties, he is a dedicated airman and an asset to the SAC maintenance function and the United States Air Force.

MINUTEMAN CREW — 1Lt Robert A. Musgrove, Crew R-133, 742d Strategic Missile Squadron, and 2Lt Richard J. Stutte, Crew S-163, Headquarters Squadron, 91st Strategic Missile Wing, demonstrated outstanding weapon system knowledge and professionalism while controlling an extremely hazardous electrical fire at a launch control center. The crew noticed a faint odor resembling burning rubber or insulation and initiated a thorough inspection to locate the source. They noticed that the LCC floor was abnormally warm near the deputy missile combat crew commander's chair. Lt Musgrove decided there was an immediate need to inspect the equipment located below the LCC floor. While Lt Stutte maintained constant surveillance, Lt Musgrove proceeded below the floor and discovered that two batteries were overheating. Knowing there was no way to electrically isolate the batteries, the crew contacted the wing command post and job control for permission to pull a primary circuit breaker on launch control power panel A to isolate the battery charger and thus somewhat control the situation. This was subsequently accomplished, and as a further step, the capsule was shut down to prevent personal injury or further equipment damage.

The crew maintained a close watch on the batteries until a maintenance team arrived. The team discovered that the terminals of the batteries were corroded and that the two batteries had arced. Had this situation been allowed to continue, the increasing heat buildup within the batteries would have resulted in battery failure and a possible explosion. Actions of Lt Musgrove and Lt Stutte in this hazardous situation reflect a dedication and an ability to function quickly and decisively. By applying professional judgment and proper safety procedures, they prevented serious equipment damage and thus avoided impairment of the mission of the 91st Strategic Missile Wing.

HALL OF FAME

TACTICAL FLYING

OVER TWENTY-TWO YEARS

170 AREFG, McGuire (NJANG)	NONE

OVER TWENTY YEARS

171 AREFW, Greater Pittsburgh (PAANG)	Mar '58
157 AREFG, Pease (NHANG)	Jun '58
97 BMW, Blytheville	Aug '58

OVER NINETEEN YEARS

940 AREFG, Mather (USAFR)	May '59
307 AREFG, Travis	Sep '59

OVER EIGHTEEN YEARS

19 BMW, Robins	Oct '60

OVER SEVENTEEN YEARS

151 AREFG, Salt Lake City (UTANG)	Feb '61
161 AREFG, Sky Harbor (AZANG)	Apr '61
126 AREFW, Chicago O'Hare (ILANG)	Apr '61
134 AREFG, McGhee Tyson (TNANG)	Aug '61
42 BMW, Loring	Sep '69
141 AREFW, Fairchild (WAANG)	Oct '69

OVER SIXTEEN YEARS

340 AREFG, Altus	Feb '62
301 AREFW, Rickenbacker	Jul '62
96 BMW, Dyess	Aug '62

OVER THIRTEEN YEARS

160 AREFG, Rickenbacker (OHANG)	Dec '64
320 BMW, Mather	Jul '65
452 AREFW, March (USAFR)	Sep '66

OVER ELEVEN YEARS

92 BMW, Fairchild	Feb '67
55 SRW, Offutt	Jul '67
2 BMW, Barksdale	Aug '67

OVER TEN YEARS

319 BMW, Grand Forks	Dec '67

OVER NINE YEARS

5 BMW, Minot	Feb '69
42 BMW, Loring	Sep '69

OVER EIGHT YEARS

141 AREFW, Fairchild (WAANG)	Oct '69
28 BMW, Ellsworth	May '70

OVER SIX YEARS

7 BMW, Carswell	Mar '72
101 AREFW, Bangor (MEANG)	Mar '72
416 BMW, Griffiss	May '72
305 AREFW, Grissom	Aug '72

OVER FIVE YEARS

376 SW, Kadena	Nov '72
379 BMW, Wurtsmith	Apr '73

OVER FOUR YEARS

384 AREFW, McConnell	Mar '74
189 AREFG, Little Rock (ARANG)	May '74

ICBM

OVER FOURTEEN YEARS

90 SMW, F E Warren	Jul '64
1 STRAD, Vandenberg	Sep '64

OVER THIRTEEN YEARS

308 SMW, Little Rock	Aug '65

OVER EIGHT YEARS

341 SMW, Malmstrom	Apr '70

OVER FIVE YEARS

390 SMW, Davis-Monthan	Jul '73

OVER FOUR YEARS

351 SMW, Whiteman	Oct '74

To gain listing in the Hall of Fame, a SAC or ARF unit must be Class A mishap-free for 48 months.

SAC SAFETY SCREEN

51 BMS, Seymour Johnson Crew S-01: P Capt Edward J. Brennan, CP Capt Barry N. Bruce, RN Capt Donavan E. Crook, NN 1 Lt Charles L. Barrett, III, EW Capt Randall M. Enright, AG TSgt Elmer L. Lindsey

911 AREFS, Seymour Johnson Crew E-114: P Capt Oscar H. McNew, CP Capt Roger S. Laubhan, NN Capt Steven T. Anderson, BO Sgt Delma T. Coggin

912 AREFS, Robins Crew E-105: FP Capt George C. Jeffcoat, CP Capt Dennis L. Earley, NN 1Lt Robert K. Force, IS Sgt Roger M. Dumaine

28 BMS, Robins Crew R-07: FP Capt Donald R. Parks, CP Capt Alexander J. Marchand, IB Capt John G. Bunch, NN 2Lt B. K. Simmons, IE Capt Ellwood A. Cousin, AG A1C Gregory S. Fields

524 BMS, Wurtsmith Crew E-34: P Capt Archie C. Smiles, Jr., ICP 1Lt John F. Shaw Van, RN Capt James N. Miller, NN 1Lt Charles E. Costa, IEW Capt Carl J. Yakabowskas, IAG Sgt Donald G. Ferguson

920 AREFS, Wurtsmith Crew E-116: P Capt Lawrence H. Stevenson, CP Capt David B. Mullis, N 1Lt Roger S. Wolczek, BO A1C Robert M. Llewellyn

97 AREFS, Blytheville Crew E-122: P Capt Danny B. Looney, CP Capt William T. Miller, NN Capt Thomas N. McKnight, BO SSgt Anthony W. Britt

340 BMS, Blytheville Crew R-11: P Capt Arthur B. Carruthers, CP 1Lt Bruce M. Nelson, RN Capt Gary A. Fischer, NN 1Lt Stephen J. Redmann, EW 2Lt Jerome E. Fonke, AG SSgt Richard M. Seudekamp

126 AREFW, Chicago O'Hare (ILANG): P Capt Herbert E. Hunsucker, CP Capt John C. Harbottle, N Capt Michael F. Seymour, BO SMSgt Gerald M. Malik

5 BMW, Minot Crew E-109: P Capt Marcus H. Bole, CP Capt Ernest D. Blair, NN Capt Michael J. Wahlstedt, BO SSgt Richard A. Raprager

22 BMW, March Crew E-12: FP Maj William V. Parkell, CP Capt James L. McGregor, RN Capt Michael J. McCreedy, NN 1Lt Robert T. Tuminello, EW 1Lt Russell T. Maynard, AG SSgt Carl F. Gohn

100 AREFW, Beale Crew E-124: P Capt Robert C. Martin, CP 1Lt Forest D. Williams, N Capt Keith E. Salisbury, BO SSgt John M. Lobenberg

6 SW, Eielson Crew E-03: IP Capt Gary L. Stewart, CP Capt Steven D. Lafayette, CP Capt John L. Bisson, N1 1Lt Richard L. Wilson, N2 Capt Thomas H. Lane

6 SW, Eielson Crew R-15: TC Capt Philip M. Wright, R1 Capt Russell G. Wendt, R2 Capt James B. Howell, R4 Capt Ross D. Litman, Jr., MT Capt Michael G. Miller, PT Sgt Robert B. Oborne, ET SSgt Carl R. Woods

308 SMW, Little Rock Crew R-121: MCCC Capt John D. Sullivan, DMCCC 2Lt William K. Doty, Jr., MFT MSgt Wilson E. Cavano, MSAT SSgt Dennis W. Black

341 SMW, Malmstrom Crew E-155: MCCC Capt Roy W. Brown III, DMCCC 1Lt Neil Wise III

351 SMW, Whiteman Crew R-162: MCCC 1Lt Terrence A. Koebbe, DMCCC 2Lt Thomas R. Underwood

390 SMW, Davis-Monthan Crew E-163: MCCC Capt Terry L. Coffee, DMCCC 1Lt Richard C. Gimmi, MSAT A1C John M. Vollmer, MFT A1C Daryl M. Smith

390 SMW, Davis-Monthan Crew E-053: MCCC Capt Gary F. Griffin, DMCCC Capt Forest W. Morrisett, MSAT Sgt Wayne A. Klipple, MFT A1C Richard C. Cyr

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